

# Nuclear Power



443 nuclear power  
plants in 47  
different countries

14% of world's  
electrical  
production

76.2% Lithuania

75.2% France

20.0% US

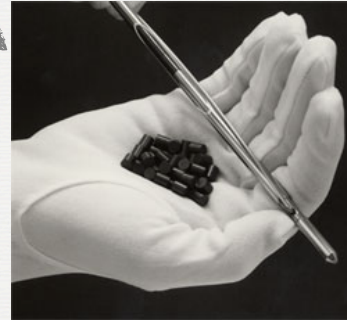


## How nuclear power works

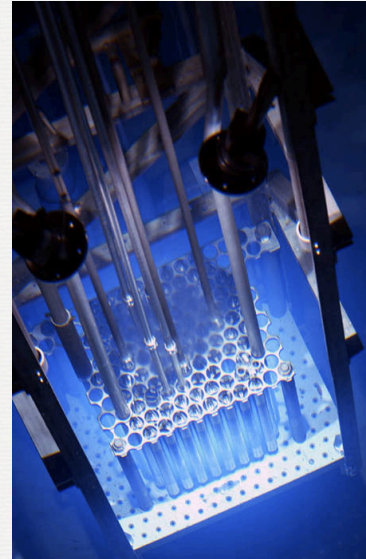
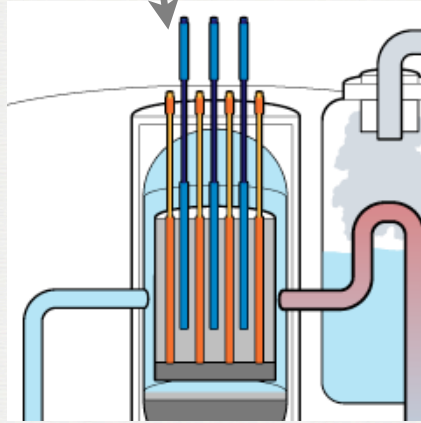
The fuel: Uranium (enriched in U-235)

Formed into 2.5 cm-long pellets

Pellets are arranged into rods, which are arranged into bundles



Control rods made of a U-absorbing material are lowered into uranium rods to control reaction rate



Decay of U produces heat



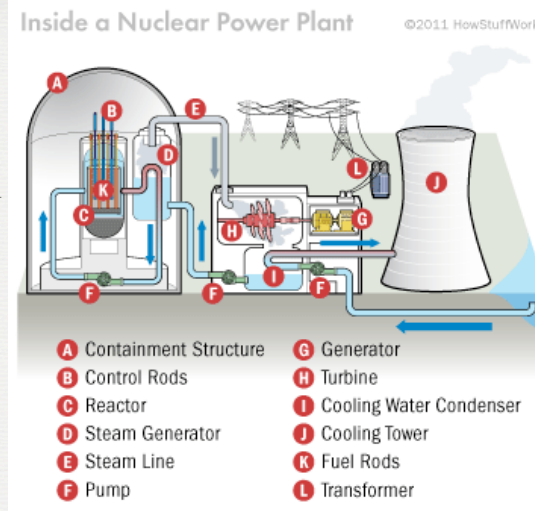
Water boils to create steam



Steam spins a turbine



Generates electricity



In an emergency, control rods are lowered all the way into the reactor to halt the nuclear reaction.

## Pros of Nuclear Power

Doesn't depend on fossil fuels and fluctuating energy prices

Minimal CO<sub>2</sub> emissions



A properly functioning nuclear power plant releases less radioactivity into the atmosphere than a coal-fired power plant

Produces a million times more energy per weight of fuel



## **Cons of nuclear power**

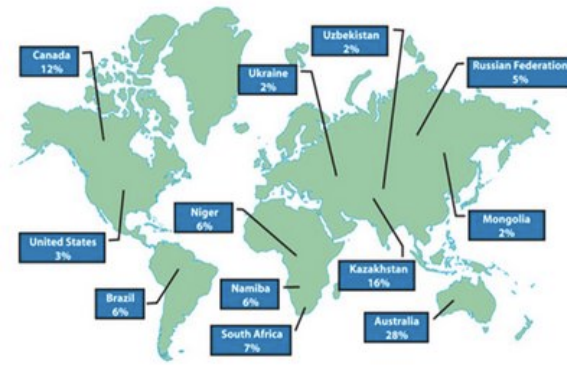
Mining uranium isn't a clean operation

Transporting uranium poses contamination risk

Generates 2000 metric tons of used fuel a year  
(radioactive waste)

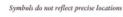
Equipment that comes into contact with waste is  
contaminated

Tens of thousands of years for fuel to decay to  
safe levels

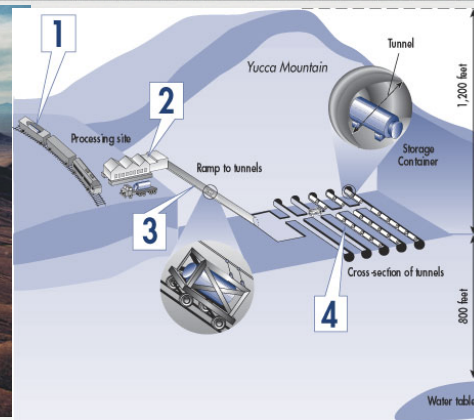


- 1) Australia
- 2) Kazakhstan
- 3) Canada









Yucca Mountain, NV  
-proposed nuclear waste  
depository

What happened in Japan?

Tsunami destroyed reactor's generators

No power to circulate cooling water

Radiation from reactor split water into  
hydrogen and oxygen

Hydrogen explosions breached reactor's steel  
containment panels, causing radiation leaks



